

BACKFLOW PREVENTING ATTACHMENT FOR TOILETS

BACKGROUND OF THE INVENTION

1. Field of the invention

This invention relates to the art of backflow valves for toilets and specifically deals with a backflow duckbill valve attachment depending from a gasket ring into the uppermost portion of a soil pipe wherein the gasket ring when used is sandwiched between standard toilet bowls and said soil pipe without a need to raise the height of the toilet bowl.

Backflow devices for toilets have heretofore required special toilet bowl constructions, revision of soil pipe constructions and have presented obstacles to full drainage flow from the toilet bowl to the soiled pipe.

It would be a vast improvement in this art to provide a relatively easily fitted backflow preventing valve assembly capable of being positioned to the bottom of a toilet bowl and into the uppermost portion of a soil pipe which is self-activating.

2. Prior Art

A prior attempt to prevent backflow into toilets can be seen in U.S. patent No. 4,637,079 to Hodge. However, this patent teaches the use of a slide valve to close the opening of a soil pipe and is interposed between the bottom of the toilet bowl and the top of the entrance to the soil pipe.

The conventional toilet bowl has a wax ring or wax gasket interposed between the upwardly facing flange of a soil pipe and the downwardly facing opening of the horn of a toilet bowl and is sandwiched therebetween to form a good seal. Frequently, the wax ring or wax gasket is fitted with a downwardly extending tubular skirt which extends for a small distance into the soil pipe thereby improving the sealing characteristics of the ring or gasket. Such skirts are seen in such prior art U.S. patents Nos. 3,224,614 to Pietrzak; 3,311,391 to Harrell; 3,349,412 to Schwartz et al 3,409,918 to Gaddy; 3,568,222 to Gantzert; 4,384,910 to Prodyna; 4,482,161 to Izzi, Jr; 5,134,727 to Scott; 5,185,890 to Dismore et al; 5,291,619 to Adoyan; 5,432,957 to Fermie et al; 5,608,922 to Leivis; 5,957,201 to Gorsior; 6,026,521 to Atkins; 6,085,363 to Huber; 6,128,947 to Anderson Sr.; 6,325,356 to Rozenblatt; and 6,442,769 to Phillips.

SUMMARY OF THE INVENTION

According to this invention there is provided a gasket or ring having the conventional configuration and size of a wax ring long used in sealing the bowl of a toilet bowl to the upwardly facing flange of a soil pipe. However, preferably, the said ring or gasket is not fabricated of a wax but rather in a plastic, preferably of a thermoplastic such as polyethylene or polypropylene. The ring or gasket has a tubular skirt depending therefrom. The skirt is a diameter whereby it extends for a distance into the soil pipe. The skirt terminates in a duckbill valve detailed to open upon the release of water from the toilet reservoir or the pressure of water from another source occurring upon flushing. The weight of water opens the duckbill valve permitting the flow therethrough. The duckbill valve closes upon the cessation of a flushing and concomitant cessation of water flow. The valve closes under the aegis of its own elasticity as the duckbill valve is constructed of rubber or the like. The self closing of the duckbill valve prevents backflow into the toilet bowl of foam or bubbles that may have accumulated in the soil pipe a common occurrence in tall apartment houses having a plurality of dish washers and/or laundry washers which all discharge into soil pipes that flow downwardly through numerous floors. The bubbles and foam produced from the suds of the said washers, being light have a tendency to hang up in the soil pipe rather than immediately flowing out through the sewer to the street. The many serpentine soil pipes result in convoluted flow providing hang ups for the accumulation of bubbles and foam. In many instances the thusly accumulated bubbles have a tendency to move up the horn of the toilet bowl to make their presence known in the toilet bowl water.

The present invention provides a salutary solution to the problem of bubbles or foam emerging out of the toilet bowl water.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective showing the device of the present invention shown explosively between a flange bearing soil pipe and the bottom of a toilet bowl.

Figure 2 is a perspective of the device of the present invention with the duckbill valve in an open and expanded condition.

Figure 3 is a schematic of the device of the present invention in two positions; one closed

and the other as completely open.

DETAILED DESCRIPTION

Figure 1 shows the device of the present invention shown, generally, by reference numeral 11. The device has a ring 12, with a skirt 13 that extends downwardly. It terminates in a duckbill valve 14 whose lips 15 are ordinarily in abutment and therefore closed. The ring 12 is of a conventional size, similar to a wax ring which is usually associated with the bottom of a toilet bowl and is sandwiched between the toilet bowl and a horizontal flange 15 upon which the ring 12 rests. The horizontal flange 15 is part of the soil pipe 16. The horizontal flange 15 has conventional adjustable bolts 17 extending vertically upwardly. The bolts 17 are payed upwardly through bores 18.

The left side of Figure 3 shows in cross-section the device 11 of the present invention mounted on the flange 15 of the soil pipe 16. The outer diameter of the skirt 13 is detailed to essentially fit closely to the inside of the soil pipe 16 to provide a snug fit.

The right side of Figure 3 depicts the bottom of the toilet bowl which has its horn portion 20 fitted to the bolts 17 of the flange 15 in a conventional manner with nuts 21 which clamps the bottom of the toilet bowl to the flange 15 with the ring 12 carrying its skirt 13 sandwiched therebetween.

The soil pipe 16 with its flange 15 extends vertically out of the floor 22 in a conventional manner.

The right side of Figure 3 shows the device of the present invention and soil pipe in cross section with water flowing therethrough whereby the lips 15 of the skirt are parted and the passage of copious quantities of water is afforded.

In the ^{Left} right side of Figure 3, with the lips of the duckbill valve being closed, as no water is flowing, it is seen that an accumulation of bubbles 23 has gathered beneath the duckbill valve, but, due to the presence of the duckbill valve cannot progress upwardly thereby preventing egress into the toilet bowl.

It is contemplated in a preferred embodiment that the ring and its skirt with its duckbill valve carrying skirt will be of the same material, i.e. an elastomeric material. In another embodiment, it is contemplated that the ring may be fabricated of a conventional way employed

in a conventional toilet assembly, with a depending tubular duckbill valve carrying skirt of an elastomeric material.